

STS-92 postflight event set for November 27

The STS-92 crewmembers will share their 12-day mission experiences aboard *Discovery* with JSC employees, contractors, friends, family members, and public guests. This event is scheduled for 6:30 p.m. November 27 in the IMAX Theatre at Space Center Houston and includes slides and a video presentation.

Commander Brian Duffy, Pilot Pamela Melroy, Mission Specialists Leroy Chiao, Michael Lopez-Algeria, Bill McArthur Jr., Jeff Wisoff, and Koichi Wakata of NASDA will share their flight experiences. During their recent visit to the International Space Station, the seven-member crew successfully installed the Z1 Truss, paving the way for installation of the U.S.-provided solar arrays in December, and attached a new shuttle docking port.

Chiao, Lopez-Alegria, McArthur and Wisoff spent 27 hours and 19 minutes conducting space walks during the on-orbit construction.

Immediately before the briefing, Johnson Space Center Director George W.S. Abbey, assisted by STS-92 Lead Flight Director Chuck Shaw and Lead Space Station Flight Director Sally Davis, will recognize key individuals and teams for their outstanding contributions to the flight. Abbey also will recognize the astronauts' accomplishments with the presentation of their NASA Space Flight Medals.

Doors will open at 6 p.m. Seating is limited and is available on a first-come, first-served basis. For more information, call Helen Harris at x38413. ■



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STATION

Mating Adapter (PMA) 3 – increased the mass of the station by about 10 tons to a total of about 80 tons. The Z1 Truss is the base structure for the U.S. solar array. The PMA 3 will provide a place for an orbiter to dock with the U.S. segment of the ISS.

In addition to the total of 27 hours and 19 minutes spent outside the station during four space walks, two each by Chiao, McArthur, Wisoff and Lopez-Alegria, the astronauts spent 27 hours and 4 minutes inside, completing connections with the new elements and transferring equipment and supplies for the Expedition 1 crew. On the final extravehicular activity, Wisoff and Lopez-Alegria took part in a special demonstration of a crew rescue backpack, Simplified Aid for EVA Rescue (SAFER). SAFER can provide contingency maneuvering capability for a spacesuited crewmember during EVA operations on the space shuttle and the space station.

STS-97 next step

With STS-92 successfully completed, all eyes move toward completing preparations at KSC for the launch of STS-97, ISS Assembly Flight 4A. *Endeavour's* five astronauts will deliver the first U.S. solar arrays that will provide power to the station and will be the first shuttle crew to visit the station's first resident crew.

"In my fourteen years as a flight director, this is one of the most challenging and exciting flights I have worked," said STS-97 Lead Shuttle Flight Director Bill Reeves. "Every one of these assembly flights is critical to the ISS, but this one has special significance to those of us working it because we will be breathing life in the form of power into the U.S. segment. We will be flowing electrons and fluids through a lot of systems that were previously delivered but have not been operational until we get there. The size of these solar arrays is also pretty awesome and should make the ISS readily visible from the ground, which will be a constant reminder to all of us of the contribution we made. The power will enable ISS to have the capability to start being used for its designed intentions."

STS-97 will be the sixth space shuttle mission to visit the space station. *Endeavour* and its crew will deliver the P6 Integrated Truss Segment, which includes the first U.S. solar arrays and a power distribution system. *Endeavour's* robotic arm will be used and two space walks will be conducted to install the P6 onto the station's Z1 Truss. The solar arrays will be the

largest ever to fly in space. Also, the crew will relocate the S-Band Antenna Support Assembly from the Z1 to the P6, which will make the S-band system operational. Another payload for STS-97 is an IMAX Cargo Bay Camera-3D, which will be used to record activities of the mission.

The P6 Integrated Truss Segment is comprised of three major elements: the Photovoltaic Array Assembly (PVAA),

Also mounted on the mast canister is the Sequential Shunt Unit (SSU) that regulates solar array energy to meet the power demands of the ISS. By shunting various strings of photovoltaic cells, the amount of power produced by a solar array wing can be controlled.

The power output from the SSU is fed into the second major element, the IEA, where the electrical power is conditioned,

Canadian Space Agency (third flight).

During docked operations, Tanner and Noriega will perform two scheduled EVAs to install and activate the P6 Truss and the electrical power system. During the first EVA, Garneau, operating the shuttle's robotic arm, will position the P6 Truss onto the Z1 Truss while Tanner and Noriega actuate the truss attachment system. Tanner and Noriega will then

remove launch restraints to allow deployment of the solar arrays and photovoltaic radiator. At the end of the first EVA, the shuttle crew will remotely deploy the solar arrays from inside the shuttle.

On the second EVA, Tanner and Noriega will reconfigure the Z1 connector patch panels to permit the P6 to provide power to the ISS. The robotic arm will assist the astronauts in relocating the S-Band Antenna Support Assembly from the Z1 Truss to the outboard end of P6. Preparation of the PMA 2 for relocation on the 5A mission will also be supported by the robotic arm. Several tasks in support of the 5A mission are also planned. The two EVAs are scheduled for six-and-a-half hours each.

"We are very excited about seeing Joe and Carlos mate the P6 element to the station," said STS-97 Lead EVA Officer Glenda Laws. "This is an exceptional EVA crew with a lot of critical tasks to perform. For example, they performed a manual backup deployment test of the solar arrays last year out at Sunnyvale. We had goose bumps that day just looking at the size of one of the arrays. This will be incredible. Also, this will be the first flight of the wireless video system that uses an EVA helmet cam. For the first time on ISS, we will have some video downlink during the EVAs that will show us exactly what the EVA crew is seeing. Thanks to the hard work of a lot of people on our EVA team, we are ready to add the next element to the ISS."

Endeavour and the five-member crew are slated for launch at 9:05 p.m. CST November 30 with landing at KSC set for 5:46 p.m. CST December 10. ■



Seldom does a photographer show up so clearly in his own work as in the case of astronaut Peter J.K. (Jeff) Wisoff, reflected in the helmet visor of astronaut Michael Lopez-Alegria, as the STS-92 mission specialist snapped this 35mm image in the cargo bay of the Earth-orbiting *Discovery*. A good portion of a heavily cloud-covered Earth and part of the International Space Station are also mirrored in Lopez-Alegria's visor.

the Integrated Equipment Assembly (IEA) and the Long Spacer.

The heart of the PVAA is a set of solar array wings. Each wing consists of two solar array panels, the largest-ever solar arrays, which convert solar energy into electrical energy through 32,800 individual solar cells. When prepared for launch, each solar array panel is folded into a box measuring just 20 inches tall and 38 feet long. When opened, the array stretches out to 1,380 inches (115 feet) tall.

Each solar array wing is mounted on a mast that is housed within the mast canister. The mast canister is mounted to a device designed to rotate and deploy the solar array wing. Rotation of the solar array wing about its longitudinal axis allows tracking of the sun while the ISS rotates about the Earth. There are two mast canister/solar array wings mounted in opposition on the IEA, resulting in a fully expanded wing set stretching more than 220 feet long and 38 feet wide.

stored and distributed. The IEA has two isolated electrical channels each consisting of power electronics, six batteries and a computer. The IEA truss structure serves as both a launch carrier and as a key element of the station primary truss assembly.

The third element is the Long Spacer. The original purpose of the Long Spacer was to separate P6 from the adjacent P5 Truss. When an early assembly sequence moved the P6 above Unity, the Long Spacer became the home for the Early External Thermal Control System, which will be used to cool the U.S. Laboratory Module *Destiny* to be delivered early next year during STS-98 (ISS Assembly Flight 5A).

The crew of STS-97 includes Commander Brent Jett Jr., making his third flight; Pilot Michael Bloomfield (second flight); and Mission Specialists Joseph Tanner (third flight), Carlos Noriega (second flight) and Marc Garneau of the